4. Spin-on conductive polymer (bake polymer and photoresist).





1. Pattern negative photoresist for

5. Polish with coarse grain size followed by fine

2. Metallize and lift-off to define pads



6. Strip photoresist molds and follow with cure

3. Pattern thick photoresist for

Substrate

second level



Substrate

Fig.1 - Fabrication Steps

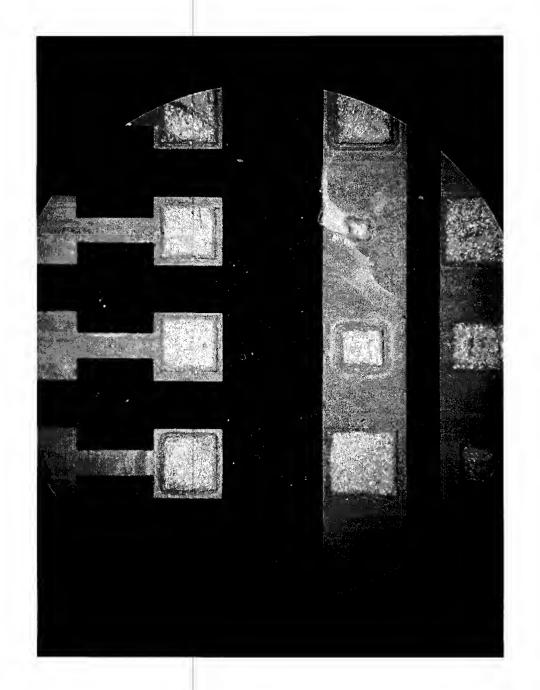


Fig. 2 - Polymer Bumps Under Optical Microscope

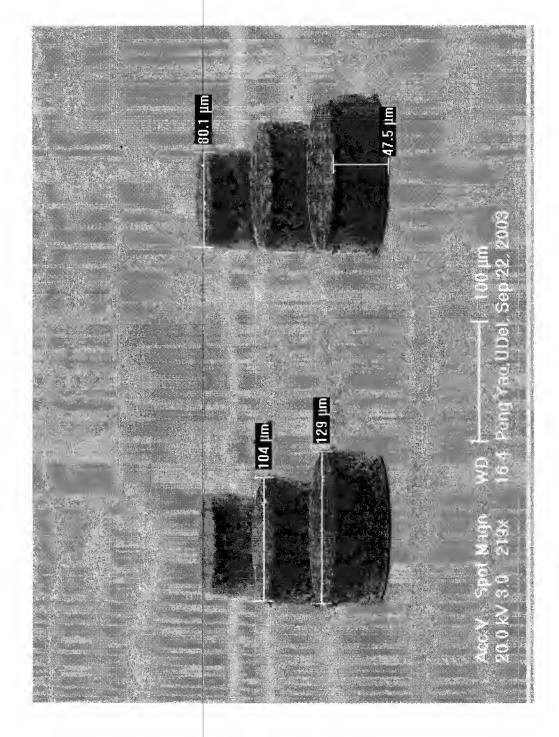


Fig. 3 - SEM View of Surface of Polished Polymer Bumps

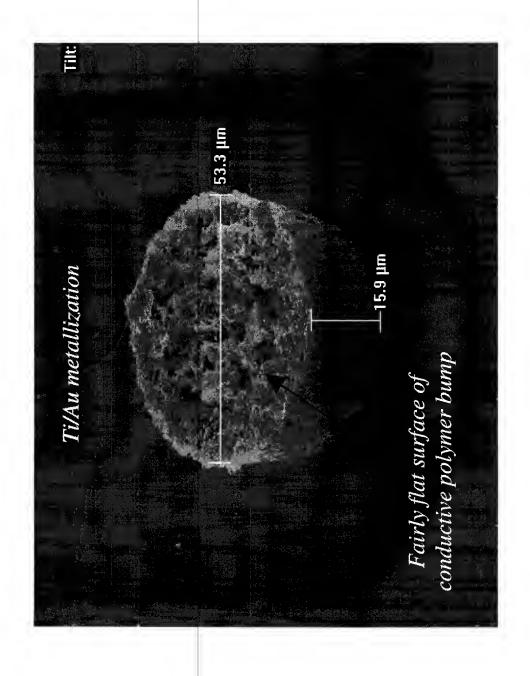


Fig. 4 - SEM View of Surface of Polished Conductive Polymer Bumps

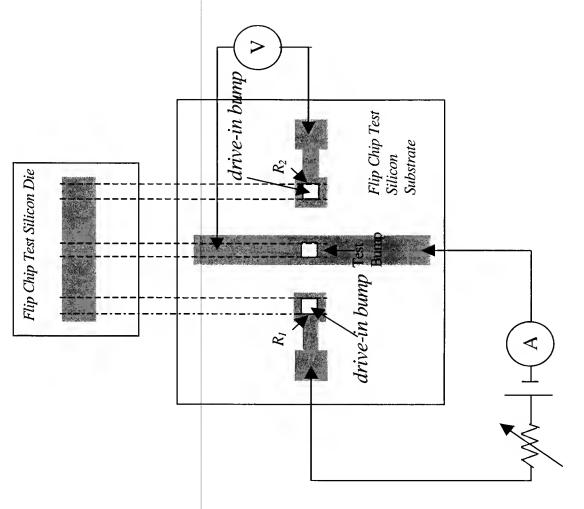


Fig. 5 - Contact Resistance Test Setup

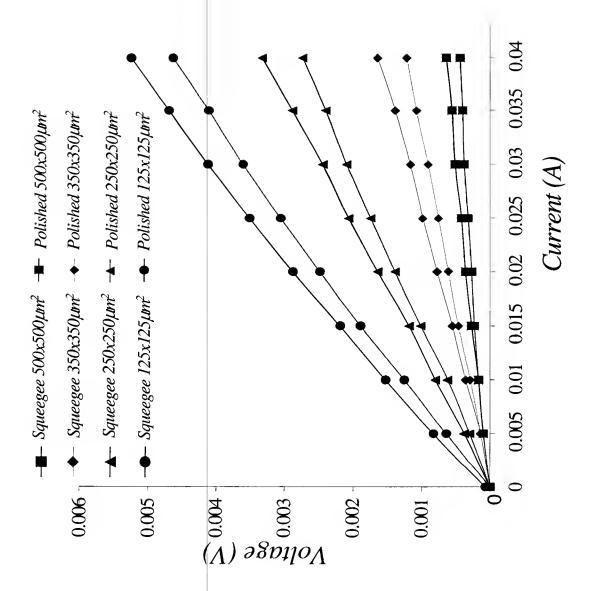


Fig. 6 - Contact Resistance Comparison

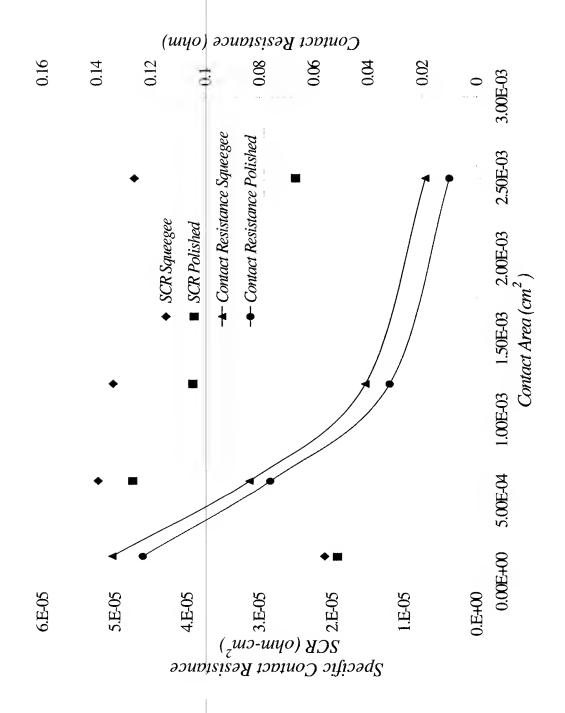


Fig. 7 - Contact Resistance and Specific Contact Resistance

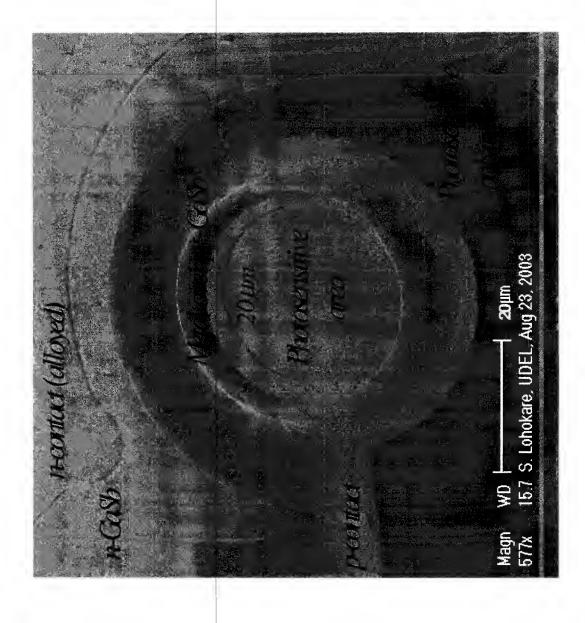


Fig. 8 – SEM View of AlGaAsSb/AlGaSb p-i-n Photodetector

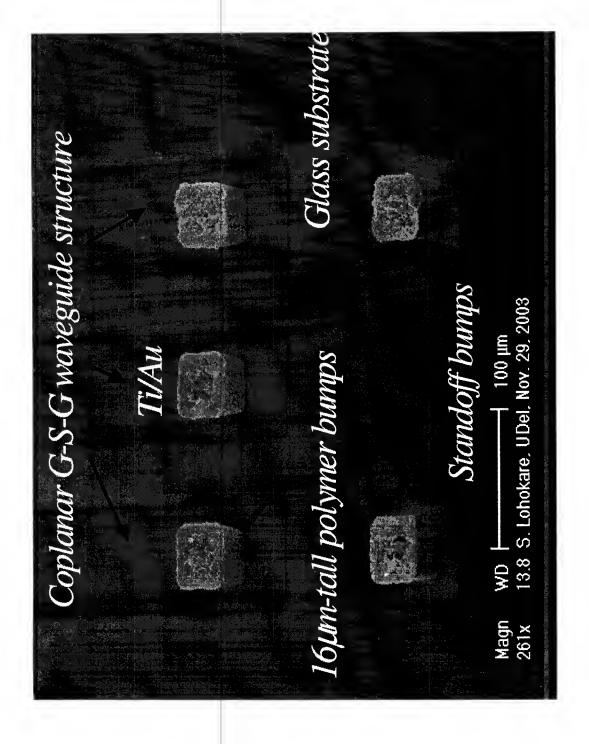


Fig. 9 - SEM View of Conductive Adhesive Bumps on Coplanar Waveguide

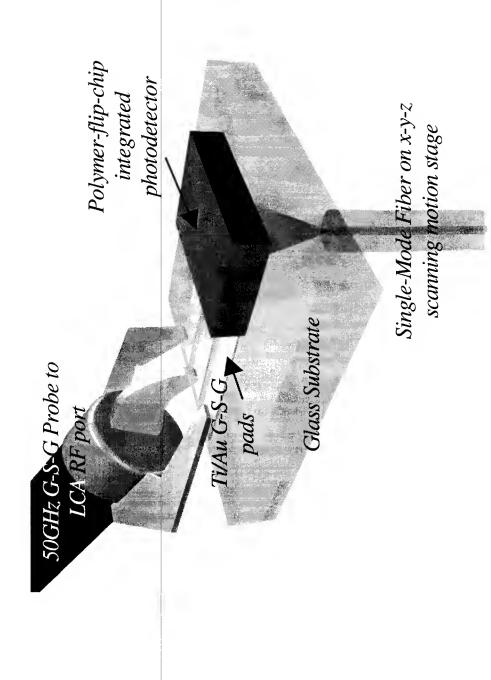


Fig. 10 – Schematic of Test Setup for PFC Integrated p-i-n Detector

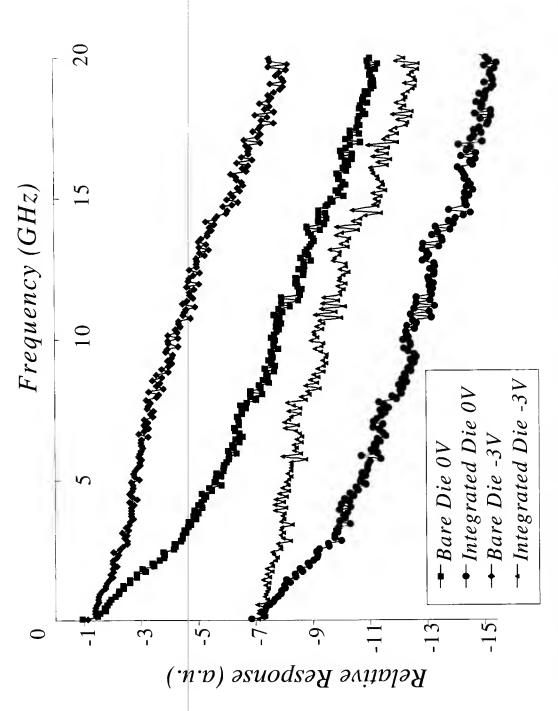


Fig. 11 – Normalized BW Response for Bare-Die and PFC Integrated p-i-n Detector